

The Role of Chiropractic Care in the Treatment of Dizziness or Balance Disorders: Analysis of National Health Interview Survey Data

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Abstract

The purpose of this study was to explore the role of chiropractic in the treatment of dizziness or balance disorders through an analysis of data from the 2008 National Health Interview Survey. Odds ratios and 95% confidence intervals (CIs) were used to assess the likelihood that respondents with dizziness or balance problems perceived that they were helped by specified practitioners. Eleven percent of respondents reported having had a balance or dizziness problem; more than 35% were aged 65 years and older. The odds ratio for perceiving being helped by a chiropractor was 4.36 (95% CI, 1.17-16.31) for respondents aged 65 years or older; 9.5 (95% CI, 7.92-11.40) for respondents reporting head or neck trauma; and 13.78 (95% CI, 5.59-33.99) for those reporting neurological or muscular conditions as the cause of their balance or dizziness.

Keywords

chiropractic, manipulation, dizziness, balance disorders

Dizziness and balance problems are common complaints, especially among older adults, with an overall prevalence of 5% to 10% and more than 30% among older adults.^{1,2} Dizziness and balance problems contribute to the risk for falls, and falls are an important public health issue for older adults.³ Falls are responsible for two-thirds of all unintentional injuries in older adults, and unintentional injuries are the fifth leading cause of death in older adults.³

Exercise programs focusing on improving “strength, gait and balance, such as Tai Chi or physical therapy,” as well as vitamin D supplements, are recommended for fall prevention in the clinical practice guideline of the American Geriatrics Society.³⁻⁵ Chiropractic care was not included as an effective intervention because, at this time, the body of evidence for chiropractic care for fall prevention is emergent. Some studies suggest that chiropractic care, specifically spinal manipulation, may be helpful in treating balance disorders and cervicogenic dizziness.⁶⁻¹⁰ According to the 2010 *Practice Analysis* survey, doctors of chiropractic report that they see approximately 1 to 3 patients with dizziness per month.¹¹ A 2010 analysis of National Health Interview Survey data showed that 8.7% of respondents aged 65 years and older reported using chiropractic or osteopathic manipulation within the past 12 months, most often for musculoskeletal complaints.¹² However, it is not known whether the general

population of older adults in the United States considers chiropractic care to be a useful intervention in the treatment of dizziness and balance disorders. The purpose of this study was to explore this issue through an analysis of data from the National Health Interview Survey 2008.

Methods

This study used data from National Health Interview Survey 2008, the only year that included a subset of question about balance and dizziness. The ASCII data sets of the Person and Sample Adult files were imported into the Statistical Analysis System, version 9.2 (SAS Institute Inc, Cary, NC) and merged into a single data set. Only variables relevant to answer the research questions were retained. The study was approved by both the research committee and the institutional review board of the institution at which the analysis was performed.

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Variables

Variables Related to Dizziness or Balance Disorders and the Role of Chiropractic. In National Health Interview Survey 2008, respondents were asked if they had a dizziness or balance problem. Additional questions related to accompanying health conditions and to the perceived causes and effects of the dizziness or balance problem. Separate variables gathered data on use of specified health care practitioners for dizziness and balance symptoms and also queried whether they were helped by these practitioners. Practitioners included were general medical physician, neurologist, osteopathic physician, psychiatrist, ear, nose, and throat specialist, nurse practitioner, chiropractor, and occupational or physical therapist.

They were also asked whether they had ever seen a doctor or other health professional (excluding emergency) about the problem and the total number of professionals seen. A series of follow-up questions asked about seeing specific health care practitioners, which included, among others, general medical physician, neurologist, osteopathic physician, psychiatrist, ear, nose and throat specialist, nurse practitioner, chiropractor, and occupational or physical therapist.

In addition, they were also asked if they had taken or tried anything to treat their dizziness or balance problem with a follow-up list of treatments such as exercise or physical therapy, over-the-counter and prescription medications or drugs, and a series of complementary and alternative modalities that included chiropractic treatment or manipulation.

Respondents were queried on whether the health professionals helped with the problem, the duration of time between when they first saw the professional and when they felt helped and the current status of the dizziness or balance problem (whether it had worsened, remained the same, or improved, in the past 12 months).

To assess the role of chiropractic on balance or dizziness, a new variable was constructed that took into consideration whether the respondent saw a chiropractor or used chiropractic treatment for the problem.

Sociodemographic Variables. Data were collected on the age of the respondent as well as many other sociodemographic parameters, including race/ethnicity, gender, United States residential regions, and level of education. For the purpose of this analysis, respondent age was the primary interest. Age, originally recorded as a continuous variable, was categorized into "<65" and "≥65" years.

Only valid responses were considered for this analysis. Responses such as "refused," "unknown," "uncertain" or no responses were coded as missing and eliminated from the analysis.

Data Analysis

Data analyses were performed using SAS 9.2. National population estimates (NPEs) were generated using the National Health Interview Survey strata, clusters and weight, for all variables, and included weighted percent. Numbers reported in the "Results" section are NPEs unless otherwise stated. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated using binary logistic regression models to assess the likelihood that a respondent with a dizziness or balance problem reporting being helped by the specified practitioner. This was done in general terms and as a function of age.

Results

National Health Interview Survey 2008 is composed of 300 strata and 600 clusters with a random sample of 21 781 participants, which resulted in an NPE of 225 227 316 civilian non-institutionalized persons in the United States. Eleven percent ($n = 2490$; NPE = 24 164 263) of respondents reported having had a balance or dizziness problem most of which occur every day and lasting less than 24 hours a spell or bout. About 28.84% noted that the problem prevented them from engaging in any activity within the past 12 months. The average number of days respondents reported having missed work or school within the past 12 months as a result of this problem was 51. More than 35% of these respondents were aged 65 years and older. About half (50.4%) of all respondents with balance or dizziness problem reported seeking care for the problem from any type of practitioner, only 4.2% of whom saw a chiropractor ($n = 53$, NPE = 500 841) and 11.6% reported using chiropractic treatment or manipulation ($n = 71$, NPE = 743 929). Overall, 7.2% of those who sought care reported receiving care from a chiropractor ($n = 98$, NPE = 956 515) with a 50% increased likelihood of being helped rather than not (OR, 1.50; 95% CI, 1.01-2.24).

As shown in Table 1, most (84.7%) of those who sought care saw a general physician. However, the OR for perceiving that they had been helped by a general physician was the lowest, 0.95 (95% CI, 0.65-1.37). Although only 4.2% reported having seen a chiropractor, the OR of perceiving being helped was the highest, 1.73 (95% CI, 0.92-3.24). For the 35% of respondents aged 65 years and older, the OR for perceiving being helped by a chiropractor (OR, 4.36; 95% CI, 1.17-16.31) was statistically significantly greater compared with those younger than 65 years of age (OR, 1.13; 95% CI, 0.56-2.31).

About 63.16% of the respondents indicated that a health professional gave the cause or diagnosis of their balance or dizziness problem. As shown in Table 2, for patients in whom the cause of their balance or dizziness problem was head or neck trauma, the OR for perceiving that they had been helped by a chiropractor was 9.5 (95% CI, 7.92-11.40), compared with OR 0.53 (95% CI, 0.25-1.13) for medical physicians. For those reporting neurological or muscular conditions as the cause, the OR for being helped by a chiropractor was 13.78 (95% CI, 5.59-33.99).

A majority (60.45%) of the respondents with balance or dizziness problem received care from multiple sources or providers and reported on average 480 days between when they first saw any provider and when they first perceived help. Only 20.7% reported that they received chiropractic care or treatment alone and noted on average 54 days between when they first saw the chiropractor and when they first perceived help. This was statistically significantly different ($P < .001$) from the number of days (256) reported by those who did not see a chiropractor. In general, about 49% of the chiropractic patients reported at least some improvement.

Table 1. Reported Use of Health Care Practitioners by 2008 NHIS Respondents Reporting Balance and Dizziness Problem and the Likelihood That Patient Perceived Being Helped.^a

Saw Practitioner			Practitioner Helped			
Practitioner	n	NPE (%)	n	NPE (%)	OR (95%CI)	
					All Age Groups	65 Years and Older
Overall	1247	12 050 030 (50.4)	666	6 637 129 (56.9)	1.96 (1.22-3.13)	1.16 (0.48-2.81)
MD	1060	10 185 675 (84.7)	562	5 589 073 (56.6)	0.95 (0.65-1.37)	0.920 (0.46-1.85)
ENT	215	2 002 807 (16.7)	120	1 170 633 (58.9)	1.11 (0.83-1.49)	0.90 (0.51-1.58)
Neurologist	317	3 139 508 (26.3)	174	1 857 414 (62.5)	1.38 (1.03-1.84)	1.22 (0.71-2.08)
Psychiatrist	80	719 197 (6.0)	44	394 459 (60.7)	1.184 (0.74-1.90)	0.68 (0.23-2.00)
DC	53	500 841 (4.2)	34	345 004 (68.9)	1.73 (0.92-3.24)	4.36 (1.17-16.31)
DO	27	274 924 (2.3)	15	153 636 (56.6)	0.99 (0.50-1.95)	0.84 (0.20-3.45)
OT/PT	110	1 038 887 (8.7)	64	637 124 (62.2)	1.28 (0.81-2.02)	0.98 (0.53-1.84)
NP	108	971 913 (8.1)	63	609 211 (63.0)	1.34 (0.89-2.03)	1.36 (0.73-2.53)

Abbreviations: NHIS, National Health Interview Survey; OR, odds ratio; NPE, national population estimate; MD, general physician (medical doctor); ENT, ear, nose, and throat medical specialist; DC, doctor of chiropractic; DO, doctor of osteopathic medicine; OT/PT, occupational therapist/physical therapist; NP, nurse practitioner.

^aN = 21 781; NPE = 225 227 216; respondents reporting balance and dizziness: n = 2490; NPE = 24 164 263 (11.0%).

Discussion

Balance or dizziness problems were reported by 11% of all respondents; however, the reported prevalence was 35% for those aged 65 and older. Balance and dizziness symptoms are a risk for falls, and risk for falls is an important public health issue affecting both morbidity and mortality in older adults, it is useful to explore therapeutic approaches to treating balance and dizziness.

We found that although a small proportion (4.2%, which is an estimated 500 841 people) sought chiropractic care for balance and dizziness, those who did were very likely to report that it had helped (OR, 1.73; 95% CI, 0.92-3.24). For those respondents aged 65 years and older, and for those reporting the cause of their balance and dizziness were trauma or neurological or musculoskeletal issues, the OR was even higher (OR, 13.78; 95% CI, 5.59-33.99).

One might infer that the respondents most likely to report having been helped by a chiropractor were subject to cervicogenic dizziness. Cervicogenic dizziness is a syndrome first formally described by Ryan and Cope in 1955.¹³ Cervicogenic dizziness usually does not include true vertigo. It is usually considered to be a diagnosis by exclusion, because there are not specific diagnostic tests to identify it definitively.^{14,15} However, it is thought to often be caused by whiplash or other head or neck injuries; spondylosis or cervical arthritis may also be a factor. A 2014 systematic review found that, although the evidence was inconclusive, it tended to be favorable for the effectiveness of spinal manipulation or mobilization for patients with symptoms of cervicogenic dizziness.¹⁰ Our data suggest that respondents with the type of symptoms corresponding the most to cervicogenic dizziness were much more likely to report having been helped by a chiropractor. This is supported by the finding that the ORs for being helped by a doctor of chiropractic for those who attributed their balance or dizziness problem to infection, side effects of medications, or other health

problem were not significant (OR, 0.70 with 95% CI, 0.39-1.26; OR, 1.18 with 95% CI, 0.47-2.98; and OR, 0.88 with 95% CI, 0.46-1.68, respectively). Thus future research might focus on the role of spinal manipulation for older adults with cervicogenic dizziness, specifically.

Limitations

The National Health Interview Survey data are limited by being self-report; so it is impossible to make conclusions about the actual effectiveness of any intervention, or which procedure a practitioner used might have helped.

The small sample size was also a limitation. A majority of the respondents with balance or dizziness problem received care from multiple providers and only 11 of those who received chiropractic care or treatment noted that they saw a single provider. Thus one cannot really assess the exact impact of chiropractic care on balance or dizziness problem based on the specific causes from these data. As noted in the "Methods" section, invalid responses were coded as missing and no missing data imputation was performed, thus greatly reducing the sample size and statistical power. However, since the missing data were assumed to be random, this created no bias in the results.

Conclusion

The National Health Interview Survey data indicate that, although seeking chiropractic care for balance and dizziness is not highly prevalent, a higher proportion of those who do report that it has helped their condition, compared to all other health professions in the analysis. Those who were older and who reported the cause of their balance problem to be head or neck trauma or neuromusculoskeletal were most likely to report being helped by chiropractic. Thus future research might focus on the role of spinal manipulation for older adults with cervicogenic dizziness, specifically.

Table 2. Specific Cause of Balance and Dizziness Problem, Health Care Provider Seen for Help, and the Likelihood That Patient Was Helped: Patient Perspective From NHIS 2008 Data (n = 21 781; NPE = 225 227 216).

Saw Practitioner			Practitioner Helped		
Practitioner	n	NPE (%)	n	NPE (%)	Odds Ratio (95% CI)
Cause of balance and dizziness problem: Head or neck trauma: n = 32 NPE = 295 089 (2.8%)					
Overall	32	295 089 (100)	22	201 201 (68.2)	
MD	26	223 601 (75.8)	17	145 588 (65.1)	0.53 (0.25-1.13)
ENT	8	93 199 (32.3)	2	37 077 (39.8)	0.13 (0.11-0.15)
Neurologist	20	182 896 (62.0)	12	100 203 (54.8)	0.13 (0.08-0.22)
Psychiatrist	4	24 570 (8.3)	3	18 469 (75.2)	1.45 (1.25-1.70)
DC	5	44 859 (16.9)	4	46 945 (94.2)	9.50 (7.92-11.40)
DO	1	5178 (1.8)	1	5178 (100)	
OT/PT	10	97 646 (33.0)	8	76 500 (78.3)	2.11 (1.18-3.77)
NP	8	81 041 (27.5)	6	58 810 (72.6)	1.33 (1.09-1.62)
Cause of balance and dizziness problem: Inner ear infection: n = 88; NPE = 975 660 (9.3%)					
Overall	83	938 473 (96.2)	64	745 481 (80.3)	2.61 (0.33-20.58)
MD	73	839 161 (90.0)	57	688 051 (83)	3.99 (2.81-5.66)
ENT	29	320 613 (34.4)	19	201 007 (64.6)	0.25 (0.20-0.32)
Neurologist	9	114 816 (12.3)	6	86 593 (75.4)	0.73 (0.63-0.85)
Psychiatrist	2	15 766 (1.69)	2	15 776 (100)	
DC	4	54 398 (5.84)	3	40 396 (74.2)	0.70 (0.39-1.26)
DO	0	0	0	0	
OT/PT	6	49 563 (5.3)	2	19 408 (39.2)	0.32 (0.12-0.16)
NP	12	164 553 (17.7)	10	142 449 (86.6)	1.74 (1.42-2.14)
Cause of balance and dizziness problem: Neurological or muscular conditions					
Overall	62	688 054 (97.9)	18	181 746 (27.0)	2.94 (2.52-3.44)
MD	44	503 235 (73.1)	29	354 420 (71.8)	0.79 (0.44-1.43)
ENT	8	54 105 (7.8)	6	41 318 (76.3)	1.22 (1.02-1.44)
Neurologist	51	573 912 (83.4)	36	441 041 (78.9)	4.86 (3.10-7.63)
Psychiatrist	7	46 545 (6.8)	5	36 237 (89.1)	3.20 (2.71-3.77)
DC	7	92 914 (13.5)	6	90 000 (96.8)	13.78 (5.59-33.99)
DO	2	21 003 (3.05)	2	21 003 (100)	
OT/PT	16	195 539 (28.4)	11	156 107 (81.9)	1.99 (1.00-3.97)
NP	8	51 778 (7.5)	6	39 335 (83.4)	1.94 (0.27-13.83)
Cause of balance and dizziness problem: Side effects of medicines and drugs					
Overall	90	944 598 (96.4)	55	633 052 (69.4)	
MD	77	811 665 (85.9)	45	537 410 (68.5)	0.71 (0.48-1.07)
ENT	12	177 833 (18.8)	7	135 151 (76.0)	1.50 (1.27-1.77)
Neurologist	18	183 427 (19.4)	9	104 435 (60.5)	0.61 (0.38-0.97)
Psychiatrist	15	163 118 (17.2)	10	120 434 (89.2)	4.27 (2.77-6.58)
DC	5	76 526 (8.1)	3	55 577 (72.6)	1.18 (0.47-2.98)
DO	2	15 615 (1.7)	2	15 615 (100)	
OT/PT	8	84 194 (8.9)	6	64 842 (77.0)	1.53 (0.79-2.97)
NP	17	171 356 (18.1)	11	130 525 (78.4)	1.75 (1.23-2.50)
Cause of balance and dizziness: Other health problems					
Overall	529	5 296 850 (93.2)	346	3 515 041 (67.8)	
MD	438	4 355 856 (82.2)	292	2 957 870 (69.3)	1.47 (1.20-2.11)
ENT	72	612 499 (11.6)	46	407 620 (67)	0.96 (0.66-1.42)
Neurologist	108	1 130 023 (21.4)	73	782 900 (72)	1.29 (0.86-1.92)
Psychiatrist	43	397 062 (7.5)	34	336 742 (84.8)	2.82 (1.70-4.67)
DC	24	220 853 (4.2)	15	143 746 (65)	0.88 (0.46-1.68)
DO	14	143 746 (2.7)	11	114 644 (88)	1.90 (0.55-2.28)
OT/PT	40	420 662 (7.9)	28	284 971 (70)	1.12 (0.55-2.28)
NP	51	490 171 (9.2)	35	352 020 (72.5)	1.28 (0.62-2.63)

Abbreviations: NHIS, National Health Interview Survey; NPE, national population estimate; MD, general physician (medical doctor); ENT, ear, nose and throat medical specialist; DC, doctor of chiropractic; DO, doctor of osteopathic medicine; OT/PT, occupational therapist/physical therapist; NP, nurse practitioner.

Authors' Note

This project was conducted at Parker University and Logan University. It was presented at the World Federation of Chiropractic Conference in May 2015, Athens, Greece.

Author Contributions

All authors contributed to the design, analysis, and writing of this article.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Ethical Approval

The Institutional Review Board of Parker University determined that this study was exempt.

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